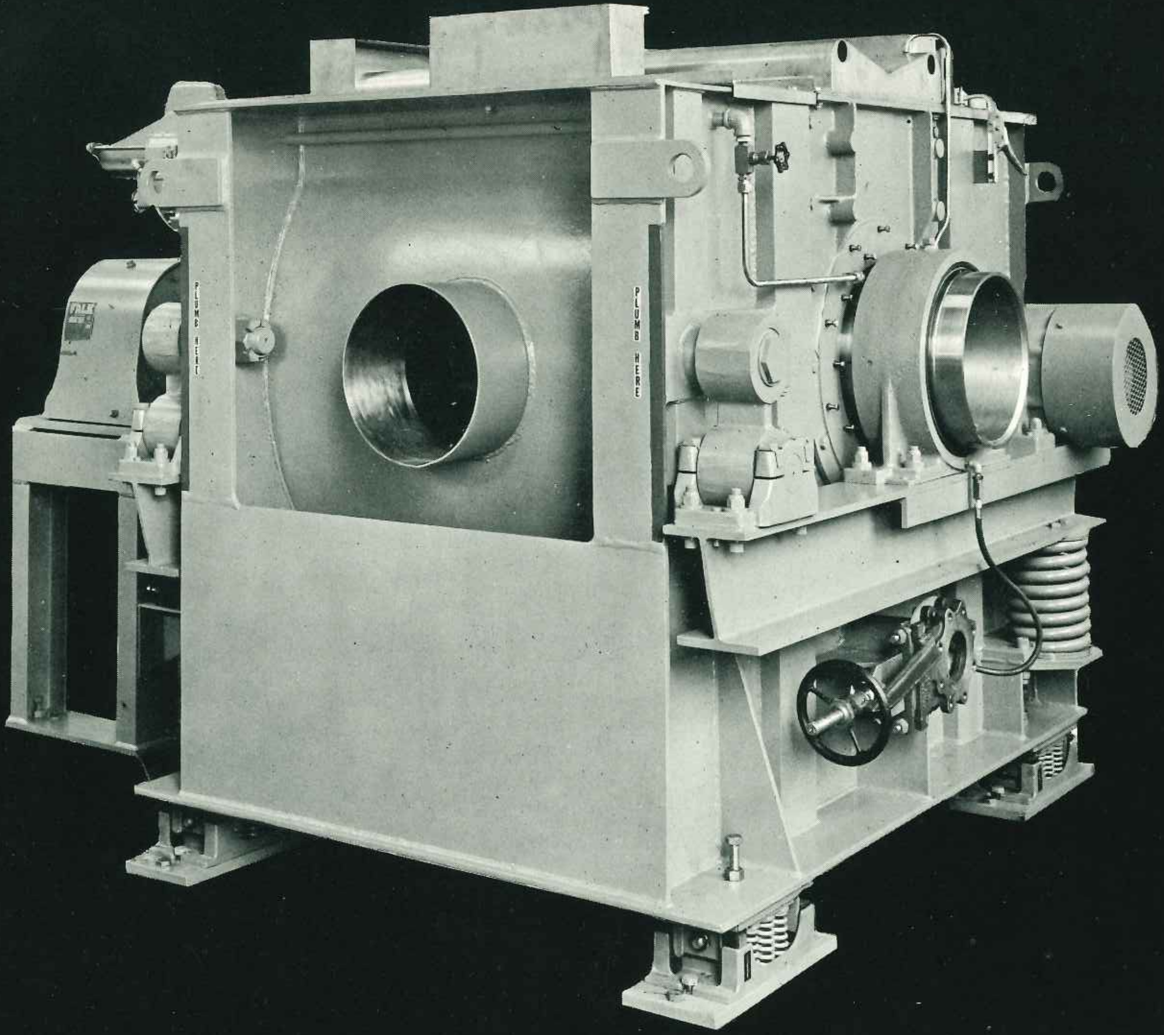
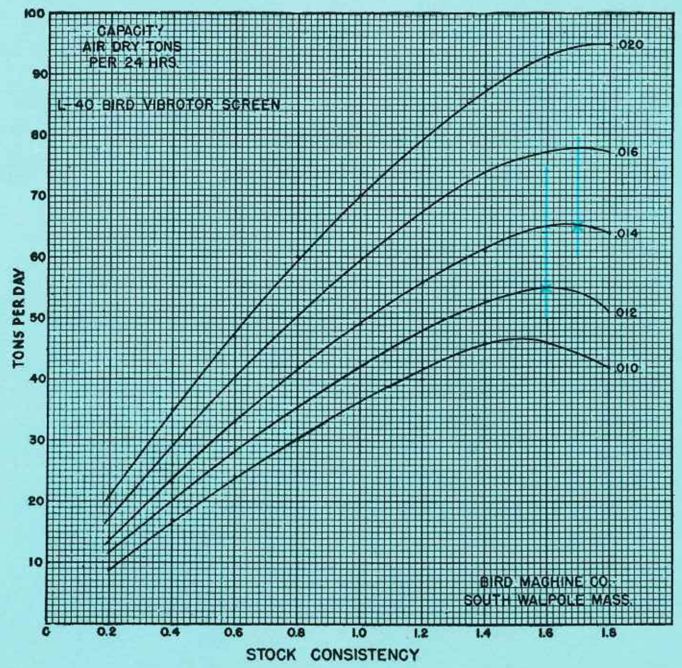


THE BIRD VIBROTOR SCREEN

Combining high frequency vibration and rotation to effect high quality, slotted plate screening of large volumes of pulp or paper stock at high consistencies.



This chart shows the relationship between capacity and consistency for a Vibrotor Screen with 40″ screen cylinder face on unbleached kraft or sulphite. Maximum capacity is attained at between 1.5% and 2.0% consistency. The two vertical lines in color show the approximate minimum and maximum limits in capacity on unbleached sulphate, depending on its coarseness.

CAPACITY AND CONSISTENCY

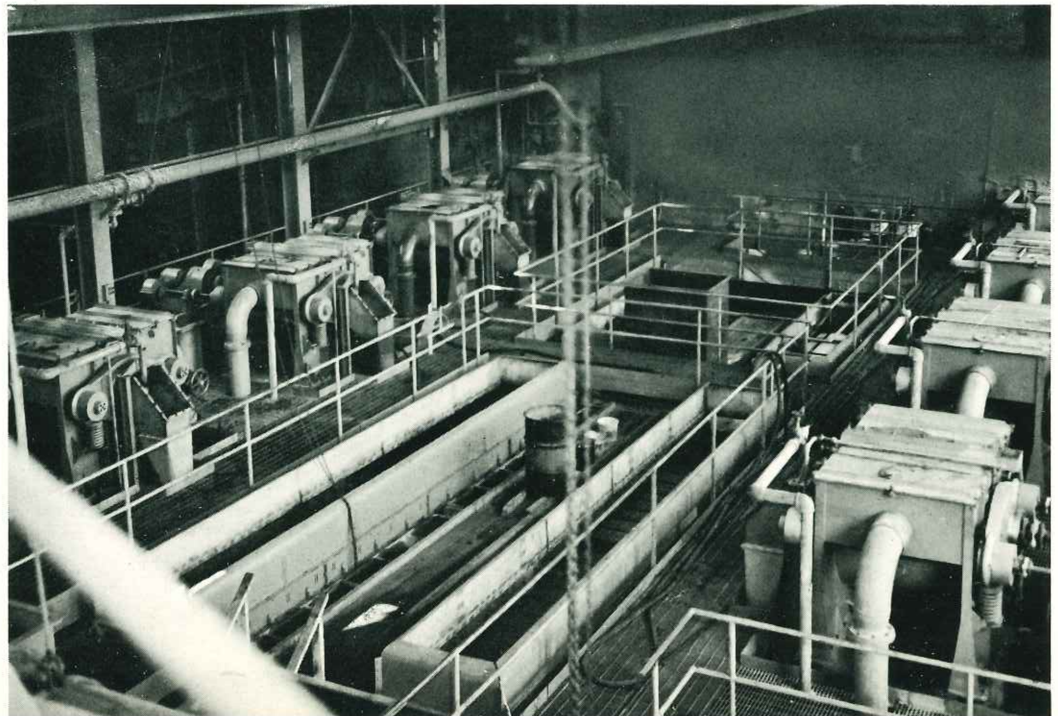
Type of Stock	Screen Plate	Consistency	Air Dry Tonnage
Sulphite, unbleached	0.010″	1.5	46
	0.012″	1.5	55
	0.014″	1.6	65
Sulphite, bleached	0.010″	1.7	57
	0.012″	1.6	68
	0.014″	1.7	82
Sulphate, unbleached	0.012″	1.6	58
	0.014″	1.7	75
Sulphate, bleached	0.012″	1.9	80+
Hardwood, unbleached	0.012″	1.5	100-110
Board, semi-chemical	0.016″	1.5	71
	0.018″	1.7	86
	0.024″	1.5	100
	0.035″	1.6	150
Board, filler stock	0.020″	2.0	110
Deinked paper stock	0.010″	2.2	up to 75
	0.012″	1.9	100+
Newsprint	0.014″	1.7	83

Some variation up or down from these tonnages will occur depending upon the hardness or coarseness of the stock. Screening at higher consistencies than those shown is often accomplished, bearing in mind, however, that the highest possible operating consistency is not necessarily the most efficient at which to operate.

THE BIRD VIBROTOR SCREEN

As its name implies, the Vibrotor Screen combines high frequency vibration and rotation. It has done this so successfully that its users assure themselves of high quality, slotted plate screening of large volumes of stock at high consistencies. As a result Vibrotor Screens are making important contributions to screening efficiency and economy in mills all over the world. Over six hundred Vibrotor Screens are in daily operation.

The first Vibrotor Screen was installed in a Swedish pulp mill in 1943 and has been running successfully ever since. Long and equally favorable operating records have been compiled in many American mills. The record of repeat orders is likewise impressive. Virtually every user has put in additional Vibrotor Screens whenever the need for increased screening capacity has developed. In one mill alone there are no less than nineteen Vibrotor Screens in operation.



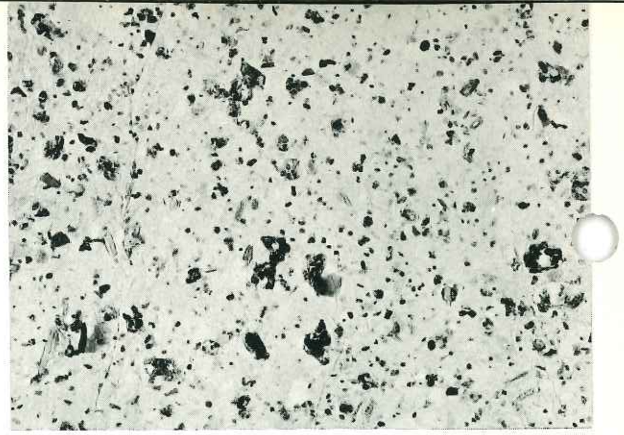
A partial view of an installation of ten Bird Vibrotor Screens which handle the entire capacity of a big mill producing pine and hardwood stocks. These Screens replaced no less than sixty-eight flat screens that were previously used to handle the same tonnage. The difference in screen room area can well be imagined.

SCREENING RESULTS

The accompanying tabulation of actual operating figures, and chart of capacities at various stock consistencies, speak for themselves. On both unbleached and bleached pulps the Vibrotor Screen produces a quality of stock that equals and usually exceeds that obtainable from other types of screens. A single Vibrotor Screen with 40″ cylinder produces the equivalent of 55 to 60 flat screen plates.

The screening of unbleached kraft, having a permanganate number of around 28, through .012″ cut plates at consistencies as high as 1.7% or more, is the sort of job that the Bird Vibrotor Screen takes in stride. Installed in combination with primary screens equipped with .125″ perforate plates, a Vibrotor Screen with .012″ slots is turning out up to 80 tons of kraft and has brought the dirt count down to *one* — a truly remarkable improvement.

Capacity per foot of floor space is extraordinarily high. Floor space requirements are approximately a quarter as much as for some older type screens, and far less auxiliary equipment is required. This has reflected itself in very considerable savings in space and even in building cost where new screen room construction is involved. Often, great increases in output without increase in floor space are obtained by replacing old equipment with Vibrotor Screens.



This hand sheet made from Vibrotor Screen tailings of deink stock shows plastics, wood shives, rubber, latex, cellophane, tinsel and other foreign matter, much of it lighter than fibre and finer than 40 mesh; also indissoluble inks, ink balls and asphalt. The Vibrotor Screen takes them all out.

The difference in operating cost as compared with flat screens is equally striking. The labor expense of cleaning the flat screen surfaces is entirely eliminated. The Vibrotor Screen automatically adjusts itself to ordinary variations in flow of stock, again eliminating the need for and cost of operating attention.

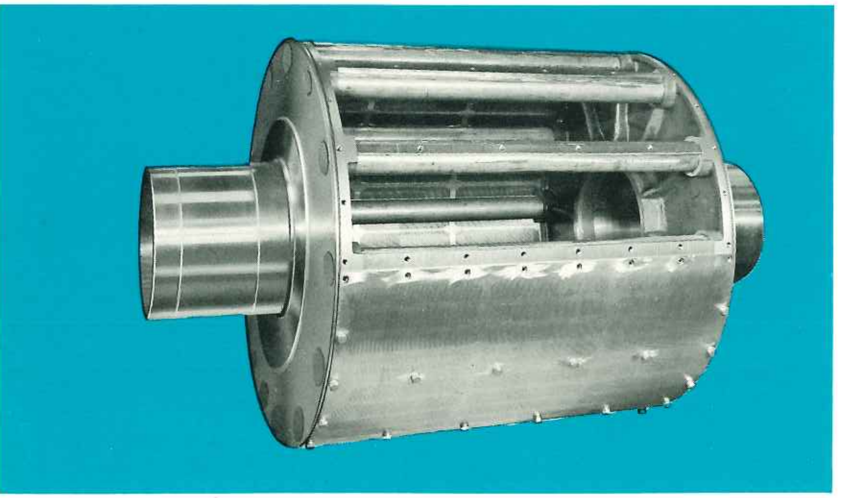
The ability to screen at high density keeps overall cost at a minimum and means less thickening equipment. Pumping of white water for dilution purposes is likewise minimized and this means smaller size piping, smaller pumps and greatly reduced power consumption.

Power input for the Vibrotor Screen is itself moderate. Equipped with a standard 15 HP motor, the actual power required for vibrating the Screen and for operating the cylinder (with a 1 HP gear reduction motor) does not exceed 12 HP.

The Vibrotor Screen is being employed with outstanding success on all kinds and grades of pulp and on high density paper machine stocks, many of which were previously considered unscreenable. A notable example of its effectiveness is in the screening of deink stock.

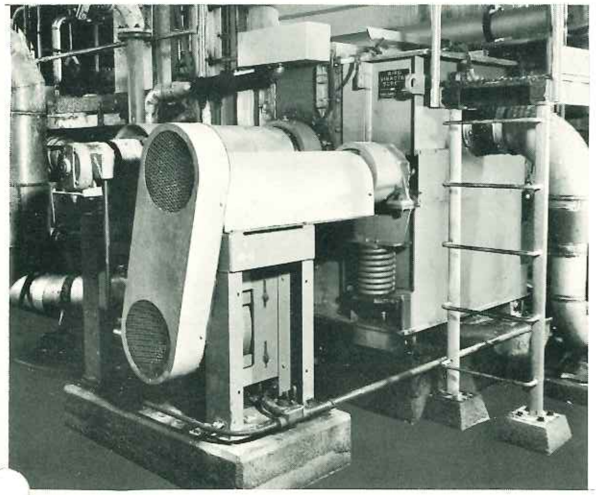
Over 3000 tons of deink per day are now being put through Vibrotor Screens. They are proving extraordinarily effective for removal of floating plastics as well as for taking out shives, rubber, latex, cellophane, tinsel, undissolvable inks, inkballs and asphalt. Anything whatever that affects quality, reduces brightness or causes pinholes and breaks is effectively stopped by the Vibrotor Screen. This applies to lighter-than-fibre dirt and minus 40 mesh specks, too.

Substantial increases in output as well as quality have resulted. The output of a single 40″ Vibrotor Screen equals that of as many as sixteen flat screens, yet the floor area required is no more than for a single flat screen. With .012 cut plates the Vibrotor Screen delivers 100 tons or more of deink stock per day; with .010 cut plates up to 75 tons, and with .008 cut plates the capacity has been as high as 55 tons per day. Variations in consistency and in percentage of long or short fibres in the furnish affect the above tonnage figures.



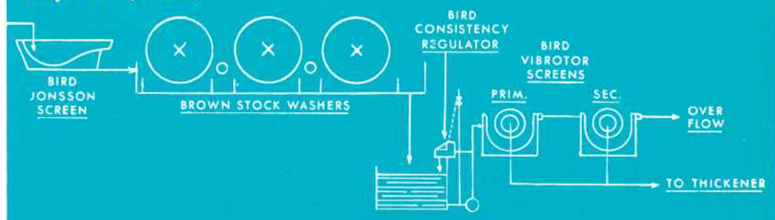
Showing the simple, clean construction of the stainless steel cylinder. No protruding spokes; no vital bearings submerged in the stock. Due to the sturdiness of this cylinder the twelve slotted, undercut stainless steel screen plates are amply supported, not subject to breakage.

These three Vibrotor Screens are operating on first quality, bleached kraft ahead of a pulp dryer, delivering up to 240 t.p.d. Note the compactness of the installation.



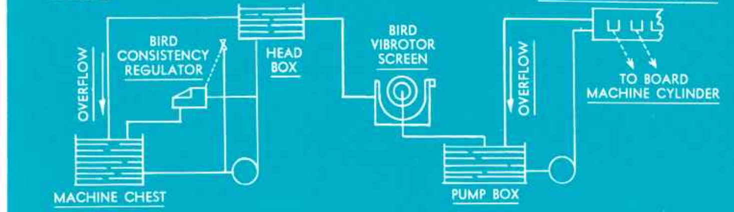
This installation of two Vibrotor Screens is handling 140 tons of bleached hemlock and spruce sulphite at 1.6% consistency through .018″ plates.

Sulphate (Kraft)



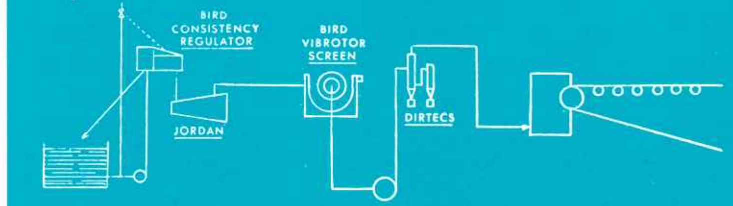
On unbleached sulphate the stock from the knotters and brown stock washers goes to Vibrotor Screens as indicated.

Board

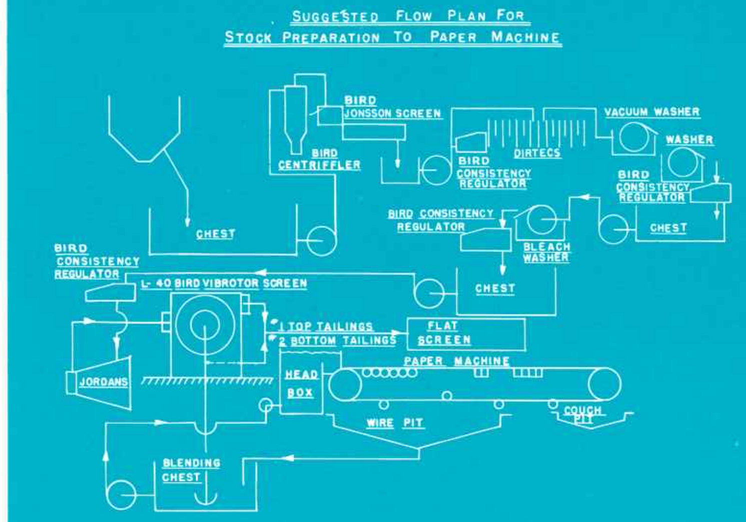


Contrast this simple flow of stock with the flow when multiple screens are employed.

Paper Mills



On paper stocks of high density an arrangement such as the above is employed to excellent advantage as regards both screening capacity and quality. Economy of space and of installation are features of this set-up.



On deink stock, clean, bright stock is the result of a cleaning system such as this. The Vibrotor Screen takes out all kinds of dirt including dirt that is lighter than the fibre.

VIBROTOR SCREEN CONSTRUCTION

Simplicity of design and construction is the keynote of the Bird Vibrotor Screen. It consists essentially of a sturdy cylinder equipped with twelve slotted plates and supported by two strong steel beams. The cylinder rotates in a vat, usually stainless steel clad. The cylinder is vibrated through the beams by an off-balanced shaft supported by two spherical roller bearings attached to one end of the beam. The vibrating load is carried by the two bearings. The entire vibrating assembly is supported by two big, soft steel coil springs, one under one end of each beam and a rubber torsion bushing at the other end.

Vibration, at a frequency of 1450 a minute, is imparted by two eccentrics mounted on the eccentric shaft which is V-belt driven. The cylinder consists simply of two stainless steel heads connected by twelve tubular bars which serve as a foundation for the slotted, undercut screen plates. Trunnions extending from the cylinder heads rest in bearings in the center of each beam.

The eccentric shaft provides equal distribution of an almost circular vibration to the screen plates and is designed so that vibration amplitude decreases slightly as the screen slot width decreases.

A feature of Vibrotor Screen design that has particular appeal to its operators is that all working parts are on the outside and therefore readily accessible. There is nothing inside the screen cylinder except the shower pipe. The cylinder sealing rings can be inspected without removing other parts or disturbing the alignment of the eccentric bearings. The eccentric bearing shaft assembly is also readily removable without affecting cylinder alignment.

HOW IT WORKS. The stock flows into the Vibrotor Screen in the same direction as the cylinder rotates. The accepted stock that has passed through the Screen plates is delivered to a closed or open trough via a hollow trunnion. The Screen operates with an overflow, the amount, from 5 to 20%, depending on the character of the stock. Both feed and discharge are flexible as to location. Feed may be introduced at the top, side or bottom. Discharge may be at the side or below.

A single, highly efficient shower covers the entire inside of the cylinder leaving no dead spots where screening will not take place. Dirt and slimes are scoured away from the Screen plates and into a compartment above the Screen where they are removed by gravity flow.

Quick, thorough removal of rejects from the vat is provided by a horizontal drain that allows for a flushing connection directly opposite the drain at the bottom of the vat.

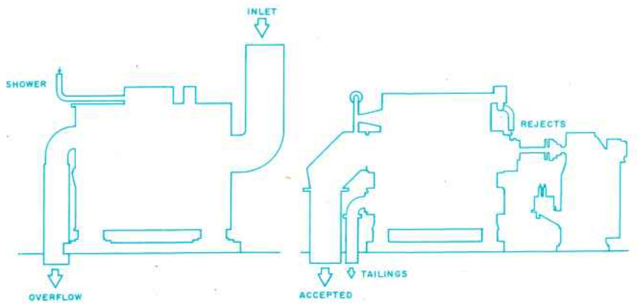
SPECIFICATIONS: The VAT of the Vibrotor Screen is made of steel or stainless clad steel.

The CYLINDER is of stainless steel.

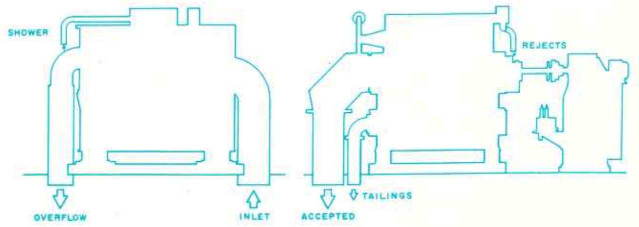
The SCREEN PLATES are stainless steel.

The CYLINDER DRIVE is a 1 HP, 1750 r.p.m. motor with gear reduction for rotation of the cylinder at the ideal speed of 9 r.p.m.

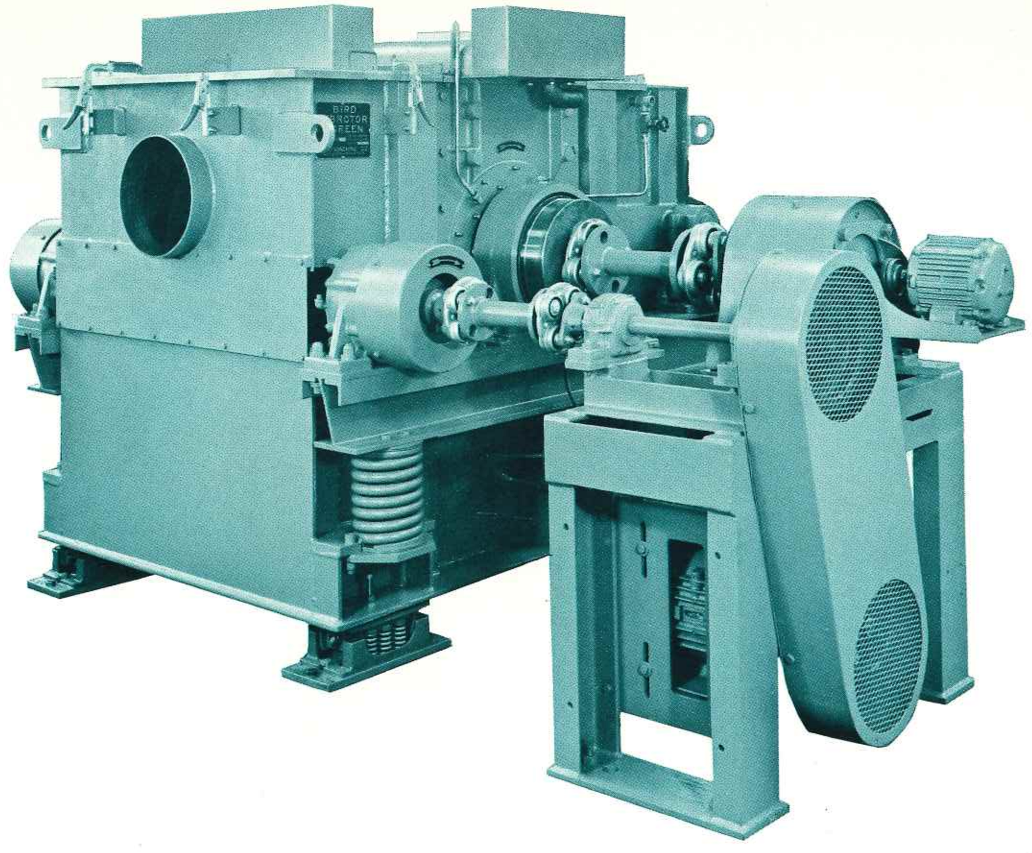
The VIBRATING SHAFT DRIVE is a 15 HP, 1750 r.p.m. motor with V-belt drive.



Bird Vibrotor Screen with stock inlet above the screen.

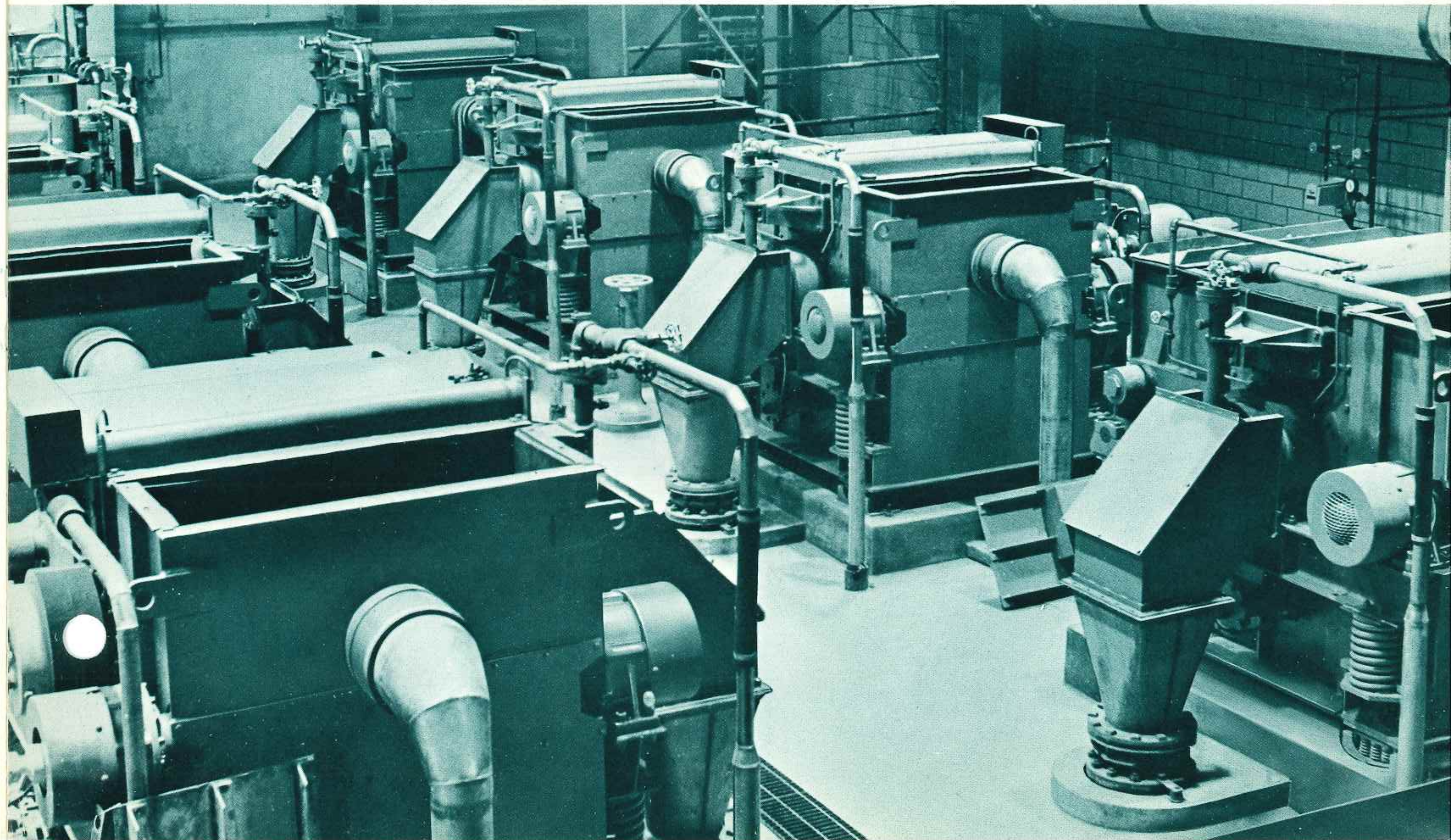


Bird Vibrotor Screen with stock inlet below the screen.



The Bird Vibrotor Screen is built in two sizes, with 20" or 40" cylinder faces. Here is the 40" Screen from the drive end. Efficient, long lasting mechanical seals are employed between the cylinder and the vat.

These seven Vibrotor Screens handle the entire output of bleached sulphate at a big, modern mill producing some 150,000 tons per year. The stock is screened at 1.5% consistency through .012" and .010" slots.



Unequalled Screen Design, Engineering and Application Experience Is Back of The Vibrotor Screen.

Bird builds the highly successful Bird Centriscreens, Bird Rotary Paper Screens and Bird Jonsson Perforate Plate Screens in addition to the Vibrotor Screen. Bird Machine's resources of screen engineering, construction, installation and service are behind every Vibrotor Screen. Bird engineering service does not end with a purchase order. Active interest in the performance of the Screen is maintained for as long as it remains in service and that, based on Vibrotor Screen experience, is likely to be a long span of years.

BIRD
MACHINE COMPANY
SOUTH WALPOLE, MASSACHUSETTS

Evanston, Illinois — 603 Main Street
Portland, Oregon — 319 S.W. Washington Street
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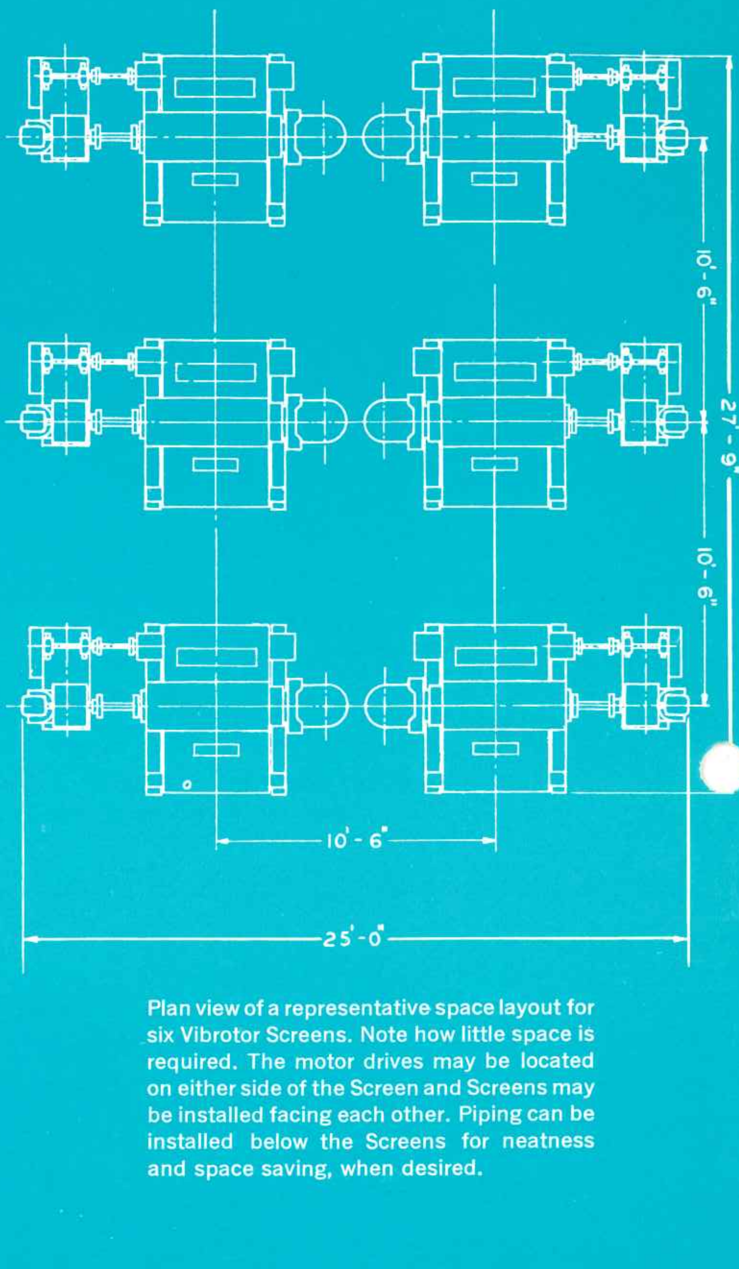
Dirtecs • Bird Centrifflers • Bird Centriscreens
Bird Cycleans • Bird Save-Alls
Bird Centrifiners • Bird Shower Pipes
Vickery Felt Conditioners • Vickery Doctors
Vickery Wet Felt Conditioners
Bird Consistency Regulators
Bird Continuous Centrifugal Filters for Lime Mud



Plan view of a representative space layout for six Vibrotor Screens. Note how little space is required. The motor drives may be located on either side of the Screen and Screens may be installed facing each other. Piping can be installed below the Screens for neatness and space saving, when desired.

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